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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,813	07/28/2003	Gerd K. Binnig	CH920000046US1	4541

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EXAMINER
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GUPTA, PARUL H

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/628,813

Applicant(s)

BINNIG ET AL.

Examiner

Parul Gupta

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-14 are pending for examination as interpreted by the examiner. The IDS filed on 7/28/03 and 11/4/05 were considered.

#### ***Claim Objections***

2. Claim 14 objected to because of the following informalities: minor typographical errors such as the extra word "to" inserted before "operable". Appropriate correction is required

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antes, US Patent 4,761,253 in view of Dougherty et al., US Patent 3,866,187.

Regarding claim 1, Antes teaches a method for erasing data recorded in a data storage device in which a data bit is written onto a surface by applying a first combination of energy and force to the surface via a tip to form a pit in the surface representative of the data bit by local deformation of the surface (column 2, lines 5-11), the method comprising applying a second combination of energy and force via the tip to

Art Unit: 2627

prerecorded deformations of the surface to be erased to substantially level the surface (column 5, lines 1-13). Antes does not but Dougherty et al. teaches in its abstract the specific purpose of using the method and system to write data bits to a surface. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of using the method and system to write data as taught by Dougherty et al. into the system of Antes. This would serve the purpose of recording, reading and erasing information in small areas using materials that exhibit a reversible elastic transition (column 1, lines 36-40).

Regarding claim 8, Antes teaches a data processing system comprising: a data storage surface (2); a tip in contact with the surface and moveable relative thereto (5); and a controller (6) operable, in a write mode, to apply a first combination of energy and force to the surface via a tip to form a pit in the surface representative of the data bit by local deformation of the surface and, in an erase mode, to apply a second combination of energy and force via the tip to prerecorded deformations of the surface to be erased to substantially level the surface. Antes does not but Dougherty et al. teaches in its abstract the specific purpose of using the method and system to write data bits to a surface. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of using the method and system to write data as taught by Dougherty et al. into the system of Antes. This would serve the purpose of recording, reading and erasing information in small areas using materials that exhibit a reversible elastic transition (column 1, lines 36-40).

Regarding claim 4, Antes teaches a method as claimed in claim 1 wherein the energy applied in the first (column 2, lines 5-11) and second (column 5, lines 1-13) combinations comprises heat.

Regarding claim 11, Antes teaches a system as claimed in claim 8, wherein the energy applied in the first (column 2, lines 5-11) and second (column 5, lines 1-13) combinations comprises heat.

4. Claims 2, 3, 9, and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Antes in view of Dougherty et al. as applied to claims 1 and 8 above, and further in view of Sakai et al., US Patent 5,329,122.

Antes in view of Dougherty et al. teaches a system and method of data writing and erasing as given in claims 1 and 8.

Regarding claim 2, Antes in view of Dougherty et al. does not but Sakai et al. teaches a method as claimed in claim 1, wherein the force applied in the first combination is greater than the force applied in the second combination (column 7, lines 49-65).

Regarding claim 3, Antes in view of Dougherty et al. does not but Sakai et al. teaches a method as claimed in claim 2, wherein the energy applied in the first combination is greater than the energy applied in the second combination (column 7, lines 49-65).

Regarding claim 9, Antes in view of Dougherty et al. does not but Sakai et al. teaches a system as claimed in claim 8, wherein the force applied in the first

combination is greater than the force applied in the second combination (column 7, lines 49-65).

Regarding claim 10, Antes in view of Dougherty et al. does not but Sakai et al. teaches a system as claimed in claim 9, wherein the energy applied in the first combination is greater than the energy applied in the second combination (column 7, lines 49-65).

Regarding claims 2, 3, 9, and 10, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of using more force and energy to write than to erase as taught by Sakai et al. into the system of Antes in view of Dougherty et al. This would serve the purpose of creating stable erasing and writing (column 7, lines 65-66 of Sakai et al.).

5. Claims 5, 6, 7, 12, 13, and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Antes in view of Dougherty et al. as applied to claims 1 and 8 above, and further in view of Nakagawa et al., US Patent 4,599,718.

Regarding claim 5, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches a method as claimed in claim 1, comprising forming new pits overlapping deformations representative of prerecorded data to be erased to substantially level the surface (column 4, lines 20-26). The fillings of the pits are considered to be new pits.

Regarding claim 6, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches a method as claimed in claim 5, wherein the forming of the new pits

comprises offsetting the new pits relative to the deformations representative of the prerecorded data to be erased (column 4, lines 20-26). The offset allows the hole to be filled accurately.

Regarding claim 7, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches a method as claimed in claim 6, wherein the forming of the new pits comprises forming a line of new pits in which each pit overlaps the immediately preceding pit (column 4, lines 20-26).

Regarding claim 12, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches in figure 5(B) a system as claimed in claim 8, wherein the controller is operable to control the tip to form new pits (26B') overlapping deformations representative of prerecorded data to be erased to substantially level the surface.

Regarding claim 13, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches in figure 5(B) a system as claimed in claim 12, wherein the controller is operable to control offset the new pits relative to the deformations representative of the prerecorded data to be erased.

Regarding claim 14, Antes in view of Dougherty et al. does not but Nakagawa et al. teaches in figure 5(B) a system as claimed in claim 13, wherein the controller to operable to control to the tip to form a line of new pits in which each pit overlaps the immediately preceding pit.

Regarding claims 5, 6, 7, 12, 13, and 14, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of erasing by

overwriting pits as taught by Nakagawa et al. into the system of Antes in view of Dougherty et al. This would serve the purpose of ensuring that a pit is formed always with good reproducibility at a level of the predetermined input energy or higher (column 2, lines 17-34 of Nakagawa et al.).

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gotsmann et al., US Patent Publication 2005/0281174 and Antonakopoulos et al., US Patent Publication 2004/0114490 both disclose a similar method of overwriting pits to erase data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7 PM.

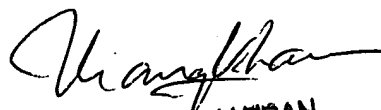
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PHG  
5/11/06

  
THANG V. TRAN  
PRIMARY EXAMINER